

3)

JOURNAL OF MOLECULAR SPECTROSCOPY

VOLUME 8, 1962

Edited by

HARALD H. NIELSEN

Associate Editor

K. NARAHARI RAO

Editorial Advisory Board

G. Amat

Børge Bak

W. S. Benedict

Svend Brodersen

Bryce L. Crawford, Jr.

David M. Dennison

H. S. Gutowsky

G. Herzberg

Michael Kasha

P.- O. Löwdin

M. Migeotte

S. Mizushima

Robert S. Mulliken

A. L. G. Rees

John Sheridan

James N. Shoolery

G. B. B. M. Sutherland

H. L. Welsh



ACADEMIC PRESS

NEW YORK and LONDON

Copyright© 1962, by Academic Press Inc.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form,
by photostat, microfilm, or any other means,
without written permission from the publishers.

Made in the United States of America

CONTENTS OF VOLUME 8

NUMBER 1, JANUARY 1962

N. LEGAY-SOMMAIRE AND F. LEGAY. Intensities of Vibration-Rotation Lines for Linear Molecules of the Type X-Y-Z.....	1
TAKESHI OKA AND YONEZO MORINO. Calculation of Inertia Defect. Part II. Nonlinear Symmetric XY_3 Molecules.....	9
M. L. GRENIER-BESSON AND G. AMAT. Rotation Spectrum of Molecules with C_{3v} Symmetry in an Excited Vibrational State $v_t = 1$	22
WILLIAM T. WEEKS, KARL T. HECHT, AND DAVID M. DENNISON. Inversion-Vibration and Inversion-Rotation Interactions in the Ammonia Molecule.....	30
W. T. KING AND BRYCE CRAWFORD, JR. Group Vibrations. Part II. Methyl- d_3 Groups.....	58
G. THYAGARAJAN. Rotational Distortion Constants for Axially Symmetric ZX_3Y ($Z = \text{Si or Ge}$; $X, Y = \text{H, D, or T}$) Molecules; Sign of the Constants in Some Molecules.....	73
Announcement.....	77
Papers Accepted for Publication.....	78

NUMBER 2, FEBRUARY 1962

K. C. JOSHI. Emission Spectrum of CuSe Molecule in the Visible Region...	79
L. W. DAASCH. Polarized Infrared Spectra of Azobenzene.....	86
LLEWELLYN H. JONES. A Resonance Interaction Valence Force Field for Octahedral $M(XY)_6$ Molecules.....	105
J. BARAN AND W. KOLOS. Vibrational Constants for the Ground State of the Hydrogen Molecule.....	121
DOLPHUS E. MILLIGAN AND MARILYN E. JACOX. Solid-State Vibrational Spectra of Methyl and Methyl- d_3 Cyanide.....	126
R. K. KHANNA. Force Constants and Thermodynamic Functions of Iodine Heptafluoride.....	134
DAVID R. LIDE, JR. Vibration-Rotation Interactions in Cyanamide; the Question of Planarity of Amides.....	142
D. J. MILLEN, G. TOPPING, AND DAVID R. LIDE, JR. Microwave Spectrum and Nonplanarity of Cyanamide.....	153
Letter to the Editors	
P. R. RYASON. Raman Band Intensities in Binary Liquid Solutions...	164
Papers Accepted for Publication.....	167

NUMBER 3, MARCH 1962

HAROLD V. MCINTOSH. On Matrices Which Anticommute with a Hamiltonian.....	169
P. L. CORIO. The Magnetic Resonance Spectra of Some Multi-spin Systems.....	193
JEAN-LOUIS CALAIS AND PER-OLOV LÖWDIN. A Simple Method of Treating Atomic Integrals Containing Functions of r_{12}	203
JOSEPH S. ZIOMEK, JOHN R. FERRARO, AND DONALD F. PEPPARD. Raman and Infrared Spectra and Normal Coordinate Treatments of the Hypophosphite and the Dideuterohypophosphite Ions.....	212
TAKEHIKO SHIMANOUCHI AND ISAO SUZUKI. Infrared Spectra and Force Constants of CH_2Cl_2 , CHDCl_2 , and CD_2Cl_2	222
O. THEIMER AND R. THEIMER. Modified Bond Moment Theory for the Spectroscopic Determination of the C—H Bond Moment.....	236
Announcement.....	255
Papers Accepted for Publication.....	256

NUMBER 4, APRIL 1962

HARUO HOSOYA, JIRO TANAKA, AND SABURO NAGAKURA. Ultraviolet Absorption Spectra of Monomer and Dimer of Benzoic Acid.....	257
IRA N. LEVINE. The Microwave Spectrum of Formaldoxime.....	276
J. B. COON, R. E. DEWAMES, AND C. M. LOYD. The Frank-Condon Principle and the Structures of Excited Electronic States of Molecules....	285
TAKESHI OKA AND YONEZO MORINO. Analysis of the Microwave Spectrum of Hydrogen Selenide.....	300
R. E. WHAN AND G. A. CROSBY. Luminescence Studies of Rare Earth Complexes: Benzoylacetate and Dibenzoylmethide Chelates.....	315
L. E. GIDDINGS, JR. AND K. KEITH INNES. The Electronic Spectra and Vibrational Assignments of Carbonyl Chloride and Formyl Fluoride..	328
Letter to the Editors	
A. RACHMAN, P. KÖKERITZ, AND H. SELÉN. Investigations on the Microwave Spectrum of <i>m</i> -Fluoro-Chloro-Benzene.....	338
Announcement.....	341
Papers Accepted for Publication.....	342

NUMBER 5, MAY 1962

WALTER F. EDGELL AND C. H. WARD. The Raman and Infrared Spectra of the Series $(\text{CH}_3)_n\text{SnCl}_{(4-n)}$	343
E. W. RANDALL AND J. D. BALDESCHWIELER. The Analysis of the Double Resonance Spectrum of <i>N</i> -Methylformamide.....	365

P. A. D. DE MAINE, M. M. DE MAINE AND CHARLOTTE FROESE. Iodine Complexes in Inert Solvents. Part XIII. The System: Iodine-Benzene- CCl_4	373
R. F. HOLLAND AND J. RUD NIELSEN. Infrared Spectra of Single Crystals. Part I. Orthorhombic $n\text{-C}_{24}\text{H}_{50}$, Monoclinic $n\text{-C}_{36}\text{H}_{74}$, and Triclinic $n\text{-C}_{18}\text{H}_{38}$ and $n\text{-C}_{20}\text{H}_{42}$	383
E. H. RICHARDSON, S. BRODERSEN, L. KRAUSE AND H. L. WELSH. The Raman Spectrum of Monodeuteromethane.....	406
Papers Accepted for Publication.....	426

NUMBER 6, JUNE 1962

R. E. WILDE. The Infrared Spectrum of CH_3SiH_3 and CH_3SiD_3	427
R. E. WILDE. A High-Resolution Infrared Study of Disilane in the Region $2000\text{--}5000\text{ cm}^{-1}$	455
E. MEISINGSETH AND S. J. CYVIN. Vibrational Mean-Square Amplitude Matrices. Part XVIII. The Bastiansen-Morino Shrinkage Effect of Symmetrical XY_3 and XY_4 Molecules.....	464
K. SATHIANANDAN, K. RAMASWAMY, AND FORREST F. CLEVELAND. Substituted Methanes. Part XXXI. Molecular Constants of Carbon Tetraiodide from Vibrational Spectra.....	470
G. S. REDDY AND J. H. GOLDSTEIN. The Proton Magnetic Resonance Spectra of $\text{H}_2\text{C}=\text{C}^{13}\text{H}_2$ and $\text{H}_2\text{C}=\text{CHD}$	475
ROBIN M. HOCHSTRASSER. The Influence of Temperature on the Emission Spectra of Stilbene Monocrystals and Mixed Crystals with Tetracene...	485
Papers Accepted for Publication.....	507
Author Index.....	508
Subject Index.....	510

